said stabilizer being relatively rigid in a direction transverse to the line of stroke and relatively weak in the direction of the line of stroke;

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a first pair of rotatable eccentric weights coupled to said bed, said first pair of rotatable eccentric weights including a first rotatable eccentric weight and a second rotatable eccentric weight; and

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a second pair of rotatable eccentric weights coupled to said bed, said second pair of rotatable eccentric weights including a third rotatable eccentric weight and a fourth rotatable eccentric weight, said rotatable eccentric weights being free-wheeling and self-phasing with respect to one another, each said rotatable eccentric weight adapted to provide an output force generally perpendicular to its axis of rotation;

whereby rotation of said first pair of rotatable eccentric weights and rotation of said second pair of rotatable eccentric weights, in combination with said stabilizers, self-phase and the output forces of said rotatable eccentric weights accumulatively add to cause said bed to vibrate.

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12. (Twice Amended) A vibratory conveying apparatus adapted to vibrate along a line of stroke for conveying material, said vibratory conveying apparatus including:

a bed on which the material is conveyed;

a counterbalance;

a plurality of stabilizers, each said stabilizer having a first end attached to said bed, a second end attached to said counterbalance and a longitudinal axis, said longitudinal axes of said stabilizers being generally parallel to one another, each said stabilizer being relatively rigid in a direction transverse to the line of stroke and relatively weak in the direction of the line of stroke;

a first pair of rotatable eccentric weights rotatably attached to said counterbalance, said first pair of rotatable eccentric weights including a first rotatable eccentric weight and a second rotatable eccentric weight; and

a second pair of rotatable eccentric weights rotatably attached to said counterbalance, said second pair of rotatable eccentric weights including a third rotatable eccentric weight and a fourth rotatable eccentric weight, said rotatable eccentric weights being free-wheeling and self-phasing with respect to one another, each said rotatable eccentric weight adapted to provide an output force generally perpendicular to its axis of rotation;

whereby rotation of said first pair of rotatable weights and rotation of said second pair of rotatable weights, in combination with said stabilizers, self-phase and the output forces of said rotatable eccentric weights accumulatively add to cause said bed to vibrate.

14. (Amended) The vibratory conveying apparatus of claim 12 including a plurality of drive springs, each said drive spring having a first end attached to said bed, a second end attached to said counterbalance, and a central axis, said stabilizers allowing movement of said bed generally parallel to said central axes of said drive springs and inhibiting movement of said bed generally transversely to said central axes of said drive springs.

15. (Twice Amended) A method of vibrating a conveying apparatus along a line of stroke to convey material, said method including the steps of:

providing a bed having an inlet end and an outlet end on which material is adapted to be conveyed;

providing a plurality of drive springs, each drive spring having a first end attached to said bed and a second end attached to a support;

providing a plurality of stabilizers attached to said bed, each said stabilizer being relatively rigid in a direction transverse to the line of stroke and relatively weak in the direction of the line of stroke;

providing a plurality of pairs of vibratory motors, each vibratory motor having a rotatable eccentric weight, said eccentric weights being free-wheeling and self-phasing with respect to one another, each said vibratory motor adapted to operate at an operating speed and to provide an output force generally perpendicular to its axis of rotation;

operating said vibratory motors to rotate said eccentric weights, such that said rotating eccentric weights self-phase and accumulatively add their output forces and thereby vibrate said bed at a vibration frequency; and

operating each said vibratory motor at a selected operating speed which approaches being equal to, or is less than, the natural frequency of said drive springs which are vibrating said bed.

17. (Twice Amended) The method of claim 15 including the step of uniformly adjusting the vibration frequency of said bed by electrically and simultaneously adjusting the rotational speed of each of said vibratory motors.

18. (Twice Amended) The method of claim 15 including the step of adjusting the operating stroke and frequency of said drive springs and stabilizers by use of an electrical control connected to each said vibratory motor for simultaneously changing the rotational speed of said vibratory motors.

REMARKS

The above-identified application has been carefully reviewed in view of the Office Action of April 4, 2002. The Office Action rejected claims 1-18 as being obvious over Dumbaugh Patent No. 4,149,627 in view of Rosenstrom Patent No. 6,024,210. Claims 1-18 were also rejected as